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ABSTRACT

The Let Me See! television science series for grades one and two was evaluated to assess the cumulative learning of objectives over the 12 weeks the programs were aired, as well as the effects from instructional programs that had the series as a central focus. The series of 12 15-minute programs on topics from the physical sciences, biological science, and the earth sciences was aired over the Wisconsin Educational Television Network, beginning in January of 1982. Subjects were first and second graders in 48 classes which viewed the series and 11 classes which did not. All classes were given a 20-item multiple-choice test both before and after the series was aired. Teachers of both experimental classes and control classes completed a questionnaire. Results indicated that classes at both grade levels who used the series gained significantly more than did the control classes in pre-test/post-test gain. Also related to post-test scores was time spent on supporting activities, particularly pre-activities and related activities other than discussion and learning center activities. Teachers generally found the series to be educational. This report includes 14 tables displaying study results, and appendices which provide program objectives and evaluation instruments. (LMM)

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Summative Evaluation of LET ME SEE!

An ITV Science Series for Grades 1 and 2

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July 20,1982

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SUMMARY

The summative evaluation of the LET ME SEE! science series for grades 1 and 2 was conducted during the spring semester, 1982. The series of 12, 15-minute programs which includes topics from the physical sciences, biological sciences, and from the earth sciences, made its debut over the Wisconsin Educational Television Network in January 1982. A total of 48 classes--24 grade 1, 22 grade 2, and two combination grade 1 and 2--using the series, and 11 control classes--five grade 1 and six grade 2--participated in the evaluation. All classes were given a 20-item multiple-choice test both before and after the series was aired. Teachers of both the experimental classes and control classes completed a questionnaire. Information from the questionnaire was validated by interviewing 15 teachers who used the series but whose classes were not tested.

The results of the testing, using an analysis of covariance with the pretest scores as the covariate and class as the N, indicate that classes at both grades who used the series gained significantly more at .01 level or better in mean score than did the control classes. An item analysis showed that significant increases by the experimental classes occurred over a range of items, including those testing science concepts, change, and interdependence of natural phenomena which are goals of the series. Related to posttest scores, using regression analysis and accounting for grade and pretest scores, were time spent on supporting activities, particularly pre-activities and related activities other than discussion and learning center activities. Eighty-six percent of the teachers rated the series and 77% rated the manual as very good or excellent. Teachers found the series to be educational and

felt that their students learned from the series facts and more about change and diversity. Although science is not given the highest priority in the curriculum, it is taught as a regular content area by most teachers. LET ME SEE! corresponded well with the range of topics taught in existing science programs and, as reported by teachers, provided a springboard to the topics.

PREFACE

This summative evaluation was conducted by the agency who also produced the series. Efforts were made to reduce any bias that may creep in from covert pressures to show positive results by being sure that conclusions are based on more than one source of information. Also, some teachers were interviewed by regional coordinators who are more identified with regions than with the production agency. Still, with all of the precautions taken, some bias can creep in. Where possible, the raw data has been included so that the readers can check conclusions that are made.

BACKGROUND

The LET ME SEE! project was initiated because of the strong response made by primary-level teachers for additional programming in the science area for grades K-3. Teachers who responded to the 1979 triennial census survey highly recommended science at the primary level as a priority. The intended grade levels for LET ME SEE!, grades 1 and 2, were selected because of the lack of available updated programming for these grades, particularly for physical and earth sciences. The existing science series--DRAGONS, WAGONS AND WAX providing programming for grade 2; EXPLORING THE WORLD OF SCIENCE for grade 3; and WONDER WALKS II in the area of life sciences for grades K-3--have been available for at least four years. This lack of current existing programming and the strong recommendation of teachers provided the necessary motivation to produce LET ME SEE!

The debut of the series of 12 programs in January 1982 was very timely. In the May 1982 issue of the Wisconsin Department of Public Instruction Newsletter, the state superintendent makes note of evidence that the country's schools are falling behind in science education, and that there is a need for greater emphasis on improving science and technology education in our schools for all students. The superintendent has given science education for K-12 a new priority for the state schools this coming school year, 1982-83.

The content of the series was specified by an advisory committee and a consultant. The advisory committee included the science supervisor for the Wisconsin Department of Public Instruction, Ken Dowling; university science educators; and elementary teachers. The consultant, Fred Finley, is a science educator who was on the faculty at the University of Wisconsin. Input from a random sample of 400 first- and second-grade teachers from the state was obtained by a questionnaire designed to identify the specific content areas that teachers feel are important. Diversity and change in the main areas of

biology, physical, and earth sciences were identified as the major focus of the series based upon the input from the different sources. As stated in the teacher's manual:

> The goals of the series are for children to understand the changes and diversities they observe in their environment. For children to reach these goals they must understand the science content (concepts, laws, and theories) and use this content in exploring, describing, explaining, and predicting events in their environment.

The 12, 15-minute programs are grouped into three main areas. Three are from the physical science--pendulums, forces, and magnets. Four are from the earth sciences--sun, air, and wind; water and rain; and soil. Four are from biological sciences--ants and worms, plants and seeds, insects, and birds. The last program, "The Pond," integrates material from all of the other programs, showing the interrelationship of things in nature. The specific objectives for each program are given in Appendix A.

The development and production of LET ME SEE! took pace over a period of two and one-half years, from the formation of the content advisory committee in the Fall of 1979 to the airing of the first program in January 1982. The first program was completed for formative evaluation in February 1981. This program on pendulums went through an extensive evaluation involving 450 students from 12 schools located in five of the seven viewing regions. Schools were located in each of rural, suburban, and urban areas. Data were collected using large group tests, small group interviews, and observations of students as they viewed the program. Results from the evaluation were used to make the pendulum program more effective in meeting its objectives, and to guide the production of the other 11 programs. In October 1982, the regional service unit coordinators were given a workshop to acquaint them with the series and to give them suggestions for conducting their own teacher workshops. A few workshops were conducted by these coordinators before the series was aired.

PURPOSE

The purpose of the summative evaluation was to assess the effectiveness of LET ME SEE! to meet its goals and objectives as the series is used in classrooms. In addition, information was collected to describe how the series was used by teachers and what factors attributed to student learning or lack of learning from the series. The evaluation focused on the learning of objectives specific to the programs in the series, and did not try to measure all potential outcomes from the series. The evaluation was designed to assess cumulative learning of objectives over the 12 weeks the series was shown, one program per week, and not learning of objectives specific to each individual program. In conducting the evaluation, it was assumed and encouraged that teachers would use the programs along with related activities such as those given in the teacher's manual. The evaluation, then, is not just of learning that takes place from the use of the 12 programs, but of effects from instructional programs that have the series as a central focus. Teachers were not given specific instruction on how to use the series, but were expected to use it as they normally would when given a teacher's manual and the programs.

In addition to this summative evaluation, Fred Finley and Norman Thomson conducted a study of specific outcomes from the use of three programs--"Magnets," "Air and Wind," and "Plants." This intensive study included pre and posstests of experimental and control groups for each program, and clinical interviews to assess conceptions and misconceptions resulting from students' views of the programs. The Finley-Thomson study had direct input into the summative evaluation by providing validated test items and identifying means of assessing student learning from the programs. Their study complements the

summative evaluation by providing detailed information on the ideas and concepts that the students get from viewing just the programs without other instructional activities. As a result of information collected by Finley and Thomson, a few programs were fine-tuned by making some modifications in the animation segments and some editing changes. These changes should result in the increased effectiveness of the programs that were modified. Thus, the findings from this summative evaluation should be considered as the results of a less finely tuned series than the actual finished product.

The summative evaluation was designed to answer the questions:

1. How do teachers and students like the series?
2. What do students learn from instructional programs which include the series?
3. What are factors that attribute or are related to the learning or lack of learning from the use of the series?
4. How do teachers use the series and activities that are included in the teacher's manual as a part of a science program?

DESIGN

The design for the testing of the students is a quasi-experimental nonequivalent control group design. Both an experimental group and a control group were given a pretest and posttest. The groups were composed of classes of students whose teachers volunteered to be in the study and not classes that were randomly assigned to groups. Both grade 1 and grade 2 classes participated in the study.

The instruments used in the study were a student test, teacher questionnaires, and a teacher interview form. The student test (Appendix B) was 20 multiple-choice items assessing the knowledge of students on program objectives. At most, three items pertained to material from any one program. Four of the items came directly from those validated with students by Finley and Thomson. The other items were written to fit the same format. A few changes in the wording and in some of the pictures were made after the pretesting so that items would be easier for first graders to understand. Other than these changes, the same test was given for both the pretest and the posttest.

Questionnaires (Appendix C) were administered to both the teachers of experimental groups and to teachers of control groups. Experimental teachers were asked to rate the series and its features, to comment on student outcomes, to record the average amount of time spent on different activities for each program, and to describe their science program. The control teachers were just asked to describe their science program by describing the materials used and the content taught during the time between the pretest and posttest.

Additional information was provided from teachers not involved in the student testing by teacher interviews conducted by the coordinators of the

regional service units. The six regional service unit people participated in a LET ME SEE! workshop in October 1981 which described the programs and demonstrated hands-on activities that teachers could have students do to support the ideas presented in the programs. The regional coordinators were each asked to interview six teachers after they had used the series. Interview forms (Appendix D) were provided to record the responses of teachers.

The sample consisted of teachers who volunteered to be in the study and their students. The regional coordinators were asked to locate teachers from their region who would be using the series and who would be willing to participate in the study. Also, all of the teachers who participated in the formative evaluation were asked if they would be interested in being in the summative evaluation. Some control classes were located in schools where a class was participating in the experimental group. However, three first-grade control classes and two second-grade control classes came from the same school which did not have any experimental classes. Only one class, a combination grade 1 and 2, dropped from the study because of not being able to view all of the programs. The number of classes in each group by grade is shown in Table 1. Two of the classes were combination first- and second-grade classes. Students at each grade level within each of these classes were treated as a separate class.

Table 1

Number of Classes by Experimental and Control Groups and by Grade

	Grade		
Group	1	2	Total
Experimental	26	24	50
Control	5	6	11

Overall, approximately 1,300 students participated in the testing of LET ME SEE!--565 grade 1 experimental, 472 grade 2 experimental, 123 grade 1 control, and 132 grade 2 control.

The statistical analysis used in determining the results varied according to the questions. T-tests were performed to determine if the experimental groups and control groups for each grade were statistically equivalent on the pretest. Analysis of covariance, using class as the unit of analysis, was used to determine statistically significant differences on the posttest between the experimental and control groups for each grade using the pretest as the covariate. Class was used as the unit of analysis since the programs were shown and activities were performed with a class of students. Also, while younger students take multiple-choice tests, they have difficulty not looking on other students' answer sheets. This results in more error in individual scores, which is less evident when the class mean is used. Regression analysis, using the posttest scores as the dependent variable, were used to determine the relation of the amount of time spent on different activities to the posttest scores accounting for the pretest scores. The questionnaires were analyzed using descriptive statistics. The stastical analysis was performed using the Statistical Analyses System, Version 79.6, SAS Institute Inc., Box 8000, Cary, North Carolina 27511.

RESULTS

Student Outcomes

The mean score for each class was computed. These scores were used to test the main effects of the series. Two classes had both grade 1 and grade 2 students. These students were separated by grade for the analysis and each considered as one grade 1 class and one grade 2 class. This resulted in having 26 and 24 experimental classes for grade 1 and grade 2 respectively, and 5 and 6 control classes for grade 1 and grade 2 classes respectively. Comparing the mean scores on the pretest for the control and experimental groups using t-tests (Table 2), at grade 1 the groups did differ significantly at the .009 level. At grade 2, means for the experimental and control groups did not differ significantly. This indicates that initially the grade 1 control groups were not exactly matched with the experimental groups, with the latter group scoring slightly higher. Thus, in further analysis the difference in pretest scores needs to be considered.

Table 2

Test for Equal Means Between the Experimental and Control Groups by Grade

	Experimental		Control		T Statistic	P Level of Significance
	Mean	S.D.	Mean	S.D.		
Grade 1	6.73	.504	6.26	.244	3.14	.009
Grade 2	8.15	1.132	8.08	.607	.22	.830

Both at grade 1 and grade 2 the classes using LET ME SEE! gained more in mean score on the tests than did the control groups. As is reported in

Table 3, the grade 1 LET ME SEE! classes gained a total of 3.76 in mean score, or 1.61 more than the control group. At grade 2, the LET ME SEE! classes gained a total of 3.79 in the mean score, or 2.02 more than the control group. Using an analysis of covariance with the pretest as the covariate, the difference in mean scores due to the series adjusting for the pretest mean scores is significant for grade 1 at the .01 level (Table 4) and for grade 2 at the .0001 level (Table 5).

Table 3

Gains on Mean Scores Between Pretests and Posttests for Experimental and Control Groups by Grade

		Pretest		Posttest		Gain
		Mean	S.D.	Mean	S.D.	
Grade 1						
LET ME SEE!	(N=26)	6.73	.50	10.49	1.55	+3.76
Control	(N=5)	6.26	.24	8.41	.89	+2.15
Grade 2						
LET ME SEE!	(N=24)	8.15	1.13	12.12	.92	+3.97
Control	(N=6)	8.08	.61	10.03	1.22	+1.95

Table 4

Analysis of Covariance on Posttest Class Mean Scores Using Pretest as Covariate for Grade 1

Source	Degrees of Freedom	Sums of Squares	F Value	P Level of Significance
Series	1	17.04	7.53	.01
Pretest Mean	1	.12		
Error	28	63.37		
Total	30	81.76		

Table 5

Analysis of Covariance on Posttest Class Mean Scores
Using Pretest as Covariate for Grade 2

Source	Degrees of Freedom	Sums of Squares	F Value	P Level of Significance
Series	1	20.20	26.87	.0001
Pretest Mean	1	6.81		
Error	27	20.30		
Total	29	48.02		

The quality of the instrument is important in assessing the educational significance between the LET ME SEE! classes and control groups. The validity of the instrument to measure learning relevant to the series was determined by including items that are directly related to program objectives. Also, four of the items were pretested with students using student interviews. Thus, the instrument content was validated by comparing it with the program objectives.

The reliability, using the KR-20 formula, was .627 for the experimental group of 1,037 students. This is moderately high considering the age level of the students tested. The reliabilities of multiple-choice tests taken by young children tend to be lower. The standard error of measurement for the test is 1.96 for the experimental group.

Because the diffrence in gain scores between the experimental and control groups at grade 2 of 2.02 is larger than the standard error, this indicates that the gain is very unlikely to be due to chance. At grade 1 with a difference in gain scores of 1.61 between the experimental and control groups which is less than the standard error, it is more likely that, considering the instrument and its characteristics, the difference could be due to chance. So the differences at grade 2 are significant. At grade 1 the differences are

less meaningful in that the differences are small enough that they could be accounted for by the lack of precision in the test.

Intact groups were used in this study. Classes were not selected randomly, so that inferences should not be made beyond the group of classes which participated in the study. The classes, however, came from a range of geographical areas and regions in the state. There is reason to believe that the classes that did participate in the study do not differ significantly from most grade 1 and 2 classes in the state. There is little evidence that the assumptions for the analysis of covariance were not met so that this type of analysis is appropriate. The assumption of homogeneity of regression coefficients was tested at both grade levels and was found to be tenable for each.

The mean class scores indicate that students in classes which viewed LET ME SEE! did significantly better on the test than did the control classes. To get a better feel for what particular ideas students learned from using the series, the percent correct of each group for the pretest and posttest for each item is given in Table 6. Items where there was a clear difference favoring the experimental classes are:

Item 2 - A pendulum is an object that swings freely back and forth from a fixed point.
Item 4 - A longer pendulum swings slower than a shorter pendulum.
Item 5 - A freely swinging pendulum does not swing back to the same height.
Item 8 - Air is made of particles too small to see.
Item 9 - The water cycle moves from water to vapor to rain to water.
Item 12 - Rock changes into soil.
Item 16 - Ants and worms help provide plants with mixed plant and soil materials needed for growing.
Item 19 - Dead plants or parts of plants slowly change back to water, soil materials, and air to be used by growing plants.
Item 20 - The higher and longer the sun is seen in the sky each day, the more the sun's light is concentrated and warms the air, water, and soil on earth.

Table 6

Percent Correct on Test Items for Experimental and Control Groups by Grade and by Test

Item #	Program	Experimental				Control			
		Grade 1		Grade 2		Grade 1		Grade 2	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	Force	20	57	37	76	17	27	34	64
2	Pendulum	33	56	40	62	49	46	41	39
3	Magnets	89	94	93	97	93	94	95	98
4	Pendulum	13	53	20	57	12	25	18	29
5	Pendulum	16	28	14	36	17	11	12	11
6	Magnets	41	69	69	79	36	50	75	79
7	Water & Rain	13	7	9	8	7	8	10	14
8	Air & Wind	25	53	24	54	26	37	35	42
9	Water & Rain	22	57	35	80	21	46	32	68
10	Air & Wind	59	65	65	68	43	52	60	69
11	Soil	18	35	17	47	7	33	21	37
12	Soil	60	82	66	92	50	58	72	77
13	Plants	38	52	62	74	40	63	65	73
14	Birds	36	39	39	42	36	29	38	44
15	Birds	51	53	58	62	55	59	60	63
16	Ants & Worms	27	55	39	67	14	38	40	48
17	Insects	15	65	15	67	7	54	10	40
18	Insects	38	41	45	48	32	50	33	42
19	Plants	17	27	19	37	17	20	14	27
20	Sun	39	57	42	58	49	47	48	47

In addition to these items, grade 1 students who used the series increased more than control students on Item 1 (pushes and pulls are called forces) and Item 6 (magnets can push and pull iron objects without touching them). The items on which differences occurred test concepts from several of the programs showing that learning took place over a range of programs rather than just a few. The items vary from testing properties (Items 1, 2, 4, 5, 6, and 8), change (Items 9, 12, and 19), and interdependence (Items 16 and 20). These correspond to the main goals of the series of understanding change and science concepts.

On the other items, the experimental groups generally improved more than the control groups, but not by a large percentage. This indicates some growth

on these items, but since the control groups also increased nearly as much, part of the growth can be due to other factors besides the use of the series. Neither the control nor the experimental groups varied greatly on items testing diversity and the relation of diversity in shape to function (Items 14 and 15). Diversity appears to be a more complex idea for grade 1 and 2 students to grasp.

On the other test items, either moderate growth occurred or the control group increased approximately the same amount as the experimental group. Items with moderate or low growth include one item to which most students knew the answer prior to viewing the series--Item 3 testing if a magnet can be used to move iron objects without touching them. Item 7--cold is needed to change water in the air into water drops--was the most difficult item of all, with very few of the students in any group, pre or post, answering the item correctly. On Item 10--wind is parts of air moving in the same direction--approximately half of the students in all groups answered the item correctly, with very little change in scores on the posttest. Growth on the two items regarding insects, Items 17 and 18, was very similar between the experimental and control groups. The lack of differences between the two groups on these items suggest that there are a few concepts that are a part of the series objectives on which the students did not increase greatly in learning from viewing the series.

The series was not used in isolation with many of the 48 teachers who used the series doing different kinds of supporting activities. In Table 7, the statistics of the amount of time spent on different activities are reported. Nearly all teachers who reported their times had spent some time in discussions following the program. The time spent on discussion per program

ranged from 0 to 30 minutes, with an average time of 10.2 minutes. On all of the other activities, at least some teachers did not spend any time doing the activity. The averages are computed only for those teachers who spent at least some time on the activity. The greatest variation occurred in time spent on planning and on other related activities. Only one teacher reported not spending any time on any support activities. The largest number of teachers, 12, spent either 10 or 15 minutes on support activities. The mean time spent altogether on support activities was approximately 32 minutes.

Table 7

Amount of Time Spent on Support Activities Per Program

Support Activity	Number Performing Activity	Range (Minutes)	Mode (Minutes)	Average Min./Prog.	Standard Deviation
Planning/prep.	37	0-40	10	12.9	7.5
Previewing activ.	33	0-15	5	8.0	3.3
Post discussion	41	0-30	10	10.2	4.9
Learning center	19	0-30	12.5	13.4	5.8
Other activities	18	0-60	5	16.6	16.7
Total support time	44	0-90	10-15	32.3	23.0

Time spent with support activities was significantly related to the posttest mean scores even after pretest mean scores and grade level were taken into account. Two regression analyses were performed to assess the relationship between time spent in support activities and posttest scores. One regression analysis (Table 8) on the posttest mean scores included the total time spent on support activities and the amount of time spent on planning. After taking into consideration the relationship of the pretest means and grade level, the total amount of support time accounted for a significant amount of variance, 12%, in the posttest mean scores. The time

spent in planning did not. In a second regression analysis (Table 9), the support time was broken down into the different type of activities. The time spent in pre-activities and with other related activities accounted for a significant amount of the variance in posstest mean scores, 13% and 5% respectively, whereas discussion time and time spent on learning center activities did not.

Table 8

Regression Analysis with Posttest Mean Score as Dependent Variable and Pretest Mean, Grade, Total Support Time and Plan Time as Independent Variable

Variable	Weight	Percent of Variance	Level of Significance
Intercept	6.160		
Pretest mean	0.353	24%	.082
Grade	1.211	9%	.008
Total support time	0.019	12%	.035
Plan/prep. time	0.016	.5%	.535
Total variance accounted for		45.5%	

Table 9

Regression Analysis with Posstest Mean as the Dependent Variable and Support Activity Times as Independent Variables

Variable	Weight	Percent of Variance	Level of Significance
Intercept	6.580		
Pretest mean	0.291	24%	.140
Grade	1.288	9%	.004
Pre-activities	.116	13%	.027
Discussion	-0.022	1%	.576
Learning center activ.	-0.019	0%	.515
Other activities	0.030	5%	.043
Total variance accounted for		52%	

The time-on-activity variables are all estimates provided by the teachers and are not precise measurements of actual time spent. Using data reported by teachers, time spent in before-program activities and in other related activities following the program had a significant effect on the learning that took place. Time spent on planning, discussion and learning center activities did not appear to be used effectively because of the low relationship that these variables had with the posttest mean scores.

Teacher Attitudes

The teachers' overall ratings of the series and the manual were high. Eighty-six percent of the teachers rated the series as very good or excellent. Only four (8%) teachers rated the series as good and one (2%) rated it as fair. The manual was rated by 77% of the teachers as either very good or excellent. None of the teachers expressed any dissatisfaction with the series as a whole, although a few teachers had some things that they would have done differently.

The number of teachers agreeing to statements about the series is shown in Table 10. Again, the responses support that not only were teachers satisfied with the series in general, teachers were positive toward the different features and characters in the series. With the exception of two items, all of the means on the teachers' attitudes are equal to or greater than 4.18. Some teachers did feel that the characters talked down to the students (2.69, or 3.31 when scale is reversed) and that the talking objects should not have been included (2.0, or 4.0 when scale is reversed). Teachers particularly agreed highly that the technical quality of the program was high, the series was visually attractive, the programs kept the interest of students, and the students looked forward to viewing the programs.

Table 10

Percentage of Teachers and Mean Response to Attitudes
Toward Features of the Series (Item 8, Teacher Questionnaire)
(N=48)

	Item	Percent Responding					Mean Response	Standard Deviation
		Strongly Disagree 1	Somewhat Disagree 2	Neutral 3	Somewhat Agree 4	Strongly Agree 5		
1	The acting was good.	2%		14%	27%	48%	4.30	.90
2	The series is better than most educational television.		2%	10%	42%	38%	4.25	.75
3	The programs kept the interest of my students.			6%	19%	67%	4.66	.61
4	I liked the character Pocus.		4%	10%	33%	42%	4.25	.85
5	I liked the character Myrtle.	2%	4%	11%	33%	42%	4.18	.97
6	I liked the character Hocus.			12%	33%	44%	4.35	.72
7	My students liked the character Pocus.		6%	10%	25%	48%	4.28	.93
8	My students liked the character Myrtle.		4%	10%	33%	42%	4.25	.85
9	My students liked the character Hocus.			2%	29%	58%	4.63	.53
10	The characters talked down to the students.	19%	23%	23%	12%	10%	2.69*	1.29
11	My students looked forward to viewing the program.			8%	25%	58%	4.54	.66
12	Vocabulary was appropriate for my students.		4%	8%	27%	50%	4.37	.84
13	The series was visually attractive.			2%	23%	67%	4.70	.51
14	The technical quality (sound, camera work, picture) was professional.			2%	31%	58%	4.61	.54
15	The animation effectively communicated ideas.			8%	31%	50%	4.46	.68
16	The talking objects (rock and plant) were easy to watch and listen to.			12%	27%	52%	4.43	.73
17	Talking objects should not have been included.	42%	19%	25%	2%	4%	2.0*	1.12

*On these items the scale is reversed. A low response is positive.

Three-quarters of the teachers strongly agreed that the series was educational (Table 11), and 85% of the teachers agreed, at least somewhat, that students learned from the series. According to many of the teachers, some of the goals for the series were achieved, with 82% agreeing, at least somewhat, that students learned more about change and diversity, and 87% agreeing that students learned some facts. Teachers did not agree as highly that the students put what they learned into actions, agreeing less that students generated questions about the material, and that the programs motivated students to look for things in their environment. Most teachers did feel that the content presented in the programs is important and that it is accurately presented.

As with other features of the series, the manual and its parts were also rated very highly (Table 12). The mean response on the manual features were all 4.27 or higher, with only a small percentage of the teachers responding neutral or expressing dissatisfaction with any parts of the manual. The use of special activities did not occur as frequently as possible. Only 48% of the teachers prepared a LET ME S2E! box for some of the programs. None of the teachers did this for all of the programs, and 42% of the teachers did not prepare a box for any of the programs. In addition, only 17 (35%) of the teachers reported doing any special projects related to the series.

Table 11

Percentage of Teachers and Mean Response to Student Outcome of the Series (Item 9, Teacher Questionnaire) (N=48)

Item	Percent Responding					Mean Response	Standard Deviation
	Strongly Disagree 1	Somewhat Disagree 2	Neutral 3	Somewhat Agree 4	Strongly Agree 5		
1 The series is educational.				17%	75%	4.82	.39
2 The series is entertaining.			6%	29%	56%	4.54	.63
3 Students learned from the series.			6%	21%	64%	4.64	.61
4 Viewing the series was a waste of time.	79%	12%				1.14*	.35
5 Students generated questions about what was presented in the series.		6%	31%	38%	17%	3.70	.85
6 The programs motivated students to look for things in their environment.		4%	17%	45%	25%	4.00	.81
7 The content presented is important for students to know.			4%	35%	52%	4.52	.59
8 The content is accurately presented.			6%	25%	60%	4.59	.62
9 Students learned from the series more about change and diversity.			10%	42%	40%	4.32	.67
10 Students learned some facts from the series.			4%	35%	52%	4.52	.59

*On this item, the scale is reversed. A low response is positive.

Table 12

Percentage of Teachers and Mean Response of Satisfaction with Manual Features (Item 12, Teacher Questionnaire) (N=48)

	Manual Features	Percent Responding: Not Satisfied At All 1	Not Very Satisfied 2	Neutral 3	Somewhat Satisfied 4	Very Satisfied 5	Mean Response	Standard Deviation
1	Objectives			2%	31%	50%	4.58	.55
2	Synopsis			2%	27%	54%	4.62	.54
3	LET ME SEE! box		2%	10%	29%	35%	4.27	.80
4	Before-the-program activities			6%	25%	50%	4.54	.64
5	After-the-program activities	2%		6%	23%	52%	4.48	.85
6	Learning center activities			10%	33%	35%	4.32	.70

The programs listed in the order they were rated by teachers are shown in Table 13. The "Insects" program was rated the highest, followed by "Magnets" and "Ants and Worms." Teachers differed the greatest on their rating of the "Pendulums" program, indicating some mixed feelings regarding this program. The program rated the lowest, "Forces," was still rated very good or higher by 67% of the teachers. When asked to identify the two most effective programs, the "Pendulums" program was mentioned by the most teachers, followed by "Magnets" and then "Insects" (Table 14). Reasons given for the high rating of the "Pendulums" program were because the concepts and ideas were new, because students were enthusiastic about what was in the program, and because students were finding all kinds of pendulums after viewing the program. Comments (Appendix C) given by teachers on other programs indicate that the rating of the effectiveness of a program corresponded to the interest of the students, the clarity with which the ideas were communicated, and the relevance to what

was being done in class. The program rated the least effective by the largest number of teachers, particularly first grade teachers, was "Forces." Teachers felt this program was too difficult for their students.

The "Pendulums" program was rated the least effective by the second largest number of teachers because some teachers found the ideas too complex for their students. There was a diverse reaction to the "Pendulums" program as supported by data in Table 13. Some teachers questioned the appropriateness of including a program on pendulums. The comments made by teachers indicate that teachers mainly listed a program as being less effective if the program was too difficult for their students, if the program repeated information already known, or if the program was not interesting to their students.

Table 13

Percentage of Teachers and Mean Response for Overall Rating of Programs (Item 15, Teacher Questionnaire) (N=48)

Program	Percent Responding					Mean Response	Standard Deviation
	Poor 1	Fair 2	Good 3	Very Good 4	Excellent 5		
Insects			19	23	50	4.34	.80
Magnets		2	17	27	46	4.27	.84
Ants and Worms		4	17	21	50	4.27	.92
Birds		2	14	31	40	4.24	.82
Soil		4	12	33	42	4.23	.86
Plants and Seeds		4	12	31	40	4.21	.87
Air and Wind		8	10	31	40	4.14	.96
Water and Rain		8	14	27	42	4.11	.99
The Pond		6	12	31	31	4.08	.93
Pendulums	2	6	17	27	38	4.02	1.05
Forces		8	14	38	29	3.98	.93

Table 14

Number and Percentage of Teachers' Ratings of Programs as Most Effective and Least Effective (Item 16, Teacher Questionnaire) (N=48)

Program	Most Effective		Least Effective	
	N	%	N	%
Pendulums	11	23	8	17
Magnets	10	21	3	6
Insects	10	21	2	4
Plants and Seeds	8	17	2	4
Birds	8	17	0	0
Ants and Worms	5	10	6	12
Air and Wind	4	8	2	4
Water and Rain	4	8	5	10
The Pond	4	8	3	6
Forces	2	4	14	29
Sun	1	2	6	12
Soil	1	2	1	2

Most teachers (73%) teach science as a regular content area, spending on the average nearly 70 minutes per week on science. Most of the teachers (62%) use hands-on activities and 54% use a textbook. A variety of textbooks are used, including Silver Burdett, Houghton-Mifflin, American Book Co., Harcourt-Brace, Heath, Laidlow, Merrill, and Ginn. The publisher mentioned the most, but still by only six teacners, was Silver Burdett. Nearly all of the teachers (90%) were at least somewhat satisfied with how well LET ME SEE! supported or complemented their regular science program. The series was generally felt by 62% of the teachers to be most appropriate for grade 1, and by 54% of the teachers to be most appropriate for grade 2. A few teachers felt the series was appropriate for kindergarten (14%) and even third grade (21%). A real indication of the positive response by teachers to the series is that 77% of the teachers said that they will be using the series again, and only 8% said that they would not.

In comparison, all except one of the ten control teachers completing a questionnaire teach science as a regular subject. The average amount of classroom time spent on science, at both grade 1 and grade 2, was 80 minutes. Nine of the control teachers use a textook, with the most frequently used text being Addison-Wesley, used by three teachers at grade 1 and two at grade 2. Silver Burdett and Holt were also mentioned as being used at grade 2. The control teachers mentioned teaching some of the same topics as presented in LET ME SEE!, but none of the teachers reported teaching all of the topics. At grade 1, all of the teachers who completed a questionnaire gave instruction on plants and seeds and birds during the time between pre and posttests. At grade 2, the topics taught by the largest number of teachers during the time the series was aired were air and wind, water and rain, forces, sun, and plants and seeds. The control groups thus had instruction on some of the topics, but by no means on the variety of topics covered by LET ME SEE!

Teacher Interviews

The six coordinators of the regional service units were each asked to interview three grade 1 teachers and three grade 2 teachers who had used LET ME SEE! One purpose of these interviews was to get a reaction to the series from teachers who had not committed themselves to the formal evaluation of having students tested and completing questionnaires. A second purpose was to provide information collected by someone not directly associated with the agency responsible for the production of the series. Teachers may be less apprehensive talking with someone less involved with the production. The interviews thus provide a validation of information collected from other sources.

Fifteen interview responses were received. These came from four of the six regions and included nine grade 1 teachers, three grade 2 teachers, one kindergarten teacher, and two special education teachers. In some cases, the teachers wrote their responses on a form instead of being interviewed. Four of the teachers interviewed did not have a manual. These teachers did activities that were related to materials that they had on hand or only did some discussion for each program.

The general attitude of the 15 teachers toward the series was very positive. Only one teacher was negative toward the series and suggested that others should not watch it. This teacher felt there was too much talking and not enough visual experiments. What most of the teachers liked best about the series was the content and how it covered the topics. Several teachers appreciated having each program focus on a single idea. The content fit well into the science programs of two of the teachers. Other teachers liked best the production elements, such as the color, costumes, and characters; the real examples using pictures of living or natural things; Myrtle (one teacher); and the song (one teacher). When asked to identify what they liked the least, three of the teachers responded nothing. Six teachers did not like Pocus, feeling that he was difficult to listen to and that a clock was not an appropriate character to talk about many of the concepts. All of the teachers reacting negatively to Pocus came from one region. Four of the teachers did not like Hocus' cawing. This seemed to bother the teachers more than the students. One special education teacher felt Hocus' speech and language model was inappropriate. Two of the teachers would have liked more examples with less talk. One teacher felt the students did not learn much from the "Sun" program, and another felt the "Soil" program was too abstract.

In using the series, seven teachers found the manual to be very useful. The other four teachers who had a manual thought it was fine or adequate. The manual was used in preparing for viewing the series by about one-third of the teachers. In introducing the programs, most of the teachers conducted discussions. One teacher would leave the students with open-ended questions before viewing the program. Following the programs, about one-third of the teachers did some type of experiments and other types of activities, whereas another third conducted discussions. Of these teachers who did not have a manual, one used activity sheets and two had the students draw pictures and take nature walks. One teacher coordinated activities among programs such as "Magnets" and "Pendulums."

The teachers who were interviewed were generally positive toward the series. The programs and activities that were mentioned the most as working best were "Magnets," "Air and Wind," and "Pendulums." The programs that did not work as well were "Sun" and "Soil." Teachers reported that their students responded positively toward the series and were interested in the programs. Four of the teachers reported evidence of their students learning from the programs:

-better understanding of earth, biological sciences, and physical sciences

-good recall after viewing programs

-remembered the vocabulary

-Students were more alert during their school bus ride noticing their environment.

Teachers who were interviewed did not give science a high priority, and placed it behind reading, language arts, and mathematics. Not as much time is available to spend on science after allocating the necessary time for these other subjects. This is one reason why some of the teachers liked having

LET ME SEE!, because it was a good springboard for good mini-units that helped in the busy curriculum. The main suggestion for the use of the series given by the most teachers was to use the teacher manual and prepare by gathering materials and resources prior to using the programs.

One high school teacher who responded to the interview questions taught trainable mentally retarded students who were functioning at a second- and third-grade level. This teacher found the programs very adaptable to her needs. She approached the programs as a language arts activity and used the program information to practice the recall of skills. Before viewing the program, she spent 5-10 minutes discussing and introducing the topic. After the program, the students would arrive at complete statements of the program content which were written on the board. The students then copied these statements in a booklet which had the program logo, and then kept the booklet as a record of the ideas they had studied. For this teacher, LET ME SEE! provided an "excellent opportunity to relate science and language arts."

CONCLUSION

Overall, teachers and students responded positively to LET ME SEE! and enjoyed viewing the programs. The teachers found the manual to be useful. The evidence from both the test and teachers indicates that students learned from the series. The most effective programs, as reported by teachers, were "Magnets," "Insects," and "Pendulums." Teachers liked using a series with the range of content which corresponded to the curriculum they were using. Teachers felt the series was visually attractive and of a high technical quality. Those few teachers who had any negative comments felt uncomfortable with Pocus or with Hocus. Teachers supported their positive feelings about the series by saying they plan to use the series again next year.

Students in classes which viewed the series learned significantly more than did the control classes. The difference in the increase in learning by the series classes from the control group was particularly evident at grade 2. The test of significance was an analysis of covariance which took into consideration pretest scores. Teachers confirmed that students learned from the series by some of their comments. Nearly all of the teachers who used the series thought it was educational and that students learned from the series. Most teachers felt that students learned more facts and more about change and diversity. Teachers were less agreeable that the series motivated students to ask questions and to look for things in their environment. One teacher did report that students were more alert during their school bus ride noticing their environment. The items on the test indicating that the students who viewed the series showed greater gains than the control students included those testing science properties, change, and interdependence of natural

phenomena. The content of these items came from a range of the programs. This indicates that learning was over a range of topics and not restricted to a few programs.

A significant positive relationship was found between time spent in support activities and posttest scores after grade and pretest scores were accounted for. In particular, time spent on before-the-program activities and doing related activities other than discussion and learning center activities were related to learning the content. Time increments spent on the activities before the programs were 0, 5, 10, or 15 minutes. Generally those classes who spent more time on these pre-activities had higher scores on the posttest. The positive relationship between other related activities and student learning is primarily due to two teachers who spent 60 minutes per program doing these activities in addition to allocating a block of 30 minutes for viewing the program, pre-activities, and dicussion. One of these first-grade teachers reported doing special projects, including experiment charts, sundial and prism for sun unit, diagrams of insects, worm farm where children collected materials on their own initiative during their recess time, library books, pictures, and direct observation when weather permitted. The results that these two teachers attained indicate the possible impact of a science program centered around the series where there is commitment to support the series with other activities.

In using the series, teachers stressed the importance of having a manual and using it to prepare and plan prior to showing the program to students. Most of the teachers, 88%, did some support activities related to the series. However, most of the teachers did activities contiguous to viewing the program, and not activities that would extend the ideas to other times during the school week. Sixty-six percent did some pre-activities and 82% did some

discussion following the programs. A much lower percentage of teachers did hands-on activities, with 38% using learning center activities and 36% doing other related activities. Thus, there is potential for the series to have greater impact than indicated by the results of this study if a greater percentage of teachers did other related activities associated to the content in the programs. Of those who did related activities, the average amount of time spent on each was 13 minutes on planning, 8 minutes on pre-activities, 10 minutes on discussion, 13 minutes on learning center activities, and 17 minutes on other related activities.

Finding classroom time to do related activities is a problem for first- and second-grade teachers. Science is veiwed as a regular content area for most teachers at these grade levels, but with a lower priority than reading, language arts, and mathematics. The average amount of time allocated to science per week by the teachers using LET ME SEE! was 70 minutes. The content in the series fits well into the science programs of most of the teachers, even though a variety of textbooks are used. Using the series over a 12-week period increases the range of topics that would be covered over the same period of time if the series is not used, as evidenced by the lower number of topics presented by the control classes. Teachers referred to the series as a springboard to teach important science topics that fit well into their existing programs.

LET ME SEE! works. Students learn more about science concepts, change, and interdependence of natural phenomena from the series. Teachers like using the series and find the teacher's manual very helpful. The series alone affects learning, however the true power of the series is expanded through the use of related activities.

Appendix A

Program Objectives

Appendix A

In this appendix are listed the objectives for each of the programs as given in the teacher's manual.

Objectives

Pendulums

Students will understand that:
1. A pendulum is an object that swings
   a. back and forth.
   b. freely (not pushed on each swing).
   c. from a fixed point.
2. A freely swinging pendulum will never swing back to the same height.
3. A longer pendulum swings slower than a shorter pendulum.

Forces

Students will understand that:
1. Pushes and pulls are called forces.
2. Forces make things move or change position.
3. Balanced forces cause no change in the motion or position of an object.
4. Unbalanced forces change the motion or position of an object.
5. Forces can be unbalanced by changing the amount of the force.
6. Forces can be unbalanced by changing the direction of the force.
7. Wind, moving water, magnets, and plants can push or pull on other things.

Magnets

Students will understand that:
1. Magnets push or pull, changing the position of objects, without touching them.
2. Objects a magnet pushes or pulls are called magnetic.
3. All magnetic objects are metals, but not all metal objects are magnetic.
4. Stronger magnets can move larger objects, and weaker magnets can move smaller objects.
5. The ends of a magnet are strongest.
6. All magnetic objects contain iron.

Sun

Students will understand that:
1. In summer, the sun is seen higher in the sky and for a longer part of each day.
2. In winter, the sun is seen lower in the sky and for a shorter part of each day.
3. The higher and longer the sun is seen in the sky each day, the more the sun's light is concentrated and warms the air, water, and soil on earth.
4. Throughout the year, the air feels coldest in the early morning and warmest in the middle of the afternoon.
5. The sun warms a darker object more than a lighter object. Applications:
   a. Dark soil in summer absorbs more of the sun's warmth than the white cover of ice or snow in the winter.
   b. It helps to wear dark-colored clothing on colder days and light-colored clothing on hotter days.

Air and Wind

Students will understand that:
1. Air is real; it takes up space.
2. Air is made of particles too small to see.
3. When moving air particles hit an object, they push the object.
4. The faster the particles of air move, the harder the object is pushed.
5. Wind is made of tiny air particles all moving in the same direction.
6. Air particles (wind) moving fast enough cause other objects to change position.
7. Warm air particles move farther apart in an upward direction.

Water and Rain

Students will understand that:
1. Water is made up of particles too small to see.
2. The particles in water are always moving.
3. When water is heated, the particles move faster.
4. When water particles move faster, more escape into the air.
5. Evaporation is when particles of water (water vapor) escape into the air.
6. As water vapor rises in the air and is cooled, the particles move closer and join together to form water drops.
7. Condensation is when water drops are forming from the water particles (water vapor) in the air.
8. Many small water drops floating in the air make up clouds.
9. As more water drops come together and the drops get larger and heavier, they fall back to earth as rain.
10. As the water cycle repeats again and again, water is used over and over.
11. Dirty water is cleaned during evaporation and condensation in the water cycle.

Soil

Students will understand that:
1. Rock changes into soil.
2. Rock breaks (changes) into smaller pieces by the forces of:
   a. the sun's heat.
   b. water freezing in cracks and wearing rock away.
   c. plants growing in cracks or on rocks.
   d. other smaller pieces of rock, carried in moving water and air, pounding or polishing.
   e. animals, crumbling and mixing rocks and soil.
3. Rock parts become mixed with leaves and grass by worms to make soil.
4. The forces of wind and water move sand and soil from place to place.
5. Some rocks wear down faster or easier than other rocks.
6. The soil profile is made of layers with mud, sand, and plant material on top; sand and stone in the middle; and rock at the bottom.

Ants and Worms

Students will understand that:

1. Ants and worms live and cause important changes in the soil.
2. Ants and worms mix plant and soil materials by pulling plant materials into the ground and moving soil materials to the surface.
3. Ants and worms help provide plants with mixed plant and soil materials needed for growing.
4. Ants and worms leave holes and tunnels in the ground.
5. Holes and tunnels hold air and water needed by plants to grow and provide space for roots to reach into the soil.
6. Although ants and worms are very different animals, they help change the soil in much the same way.
7. Soil and plants and ants and worms all take from (need) and give to (help) each other.

Plants

Students will understand that:

1. The baby plant (embryo) in a seed begins to grow when the seed becomes wet and warm.
2. The first food for plants which grow from seeds is the food stored in the seed itself.
3. Plants need air, sunlight, water, and materials from the soil to make more food in order to develop and grow.
4. Food made by plants is stored in roots, stems, leaves, flowers, fruits, and seeds.
5. When plants or parts of plants can no longer use air, sunlight, water, and materials from the soil, they die and fall back to the ground.
6. Dead plants or parts of plants slowly change back to water and soil materials to be used by growing plants.
7. The cycle of the growing, dying, and changing of plants repeats again and again.
8. Plants that grow from seeds produce more seeds.
9. Seeds are carried to new places by the wind and animals.
10. Some new plants grow from parts of the old plant (stems, roots, bulbs, etc.).

Insects

Students will understand that:

1. All adult insects have six legs, two antennae or feelers, and a body that is divided into three parts.
2. Adult insects differ in size, shape, color, types of mouth parts, ways of moving, and places of living.
3. The type of an adult insect's mouth parts--sucking, chewing, or piercing--allows it to feed on certain parts of plants or upon other kinds of food.
4. Various kinds of insects live in the same community of living things.
5. An insect's body changes during its life cycle from egg to adult.

Birds

Students will understand that:
1. All birds have feathers, two wings, a beak, and two legs and feet.
2. Birds differ in size, shape, color, and type of beak and legs and feet.
3. The size and shape of a bird's beak allows it to get and eat certain foods.
4. The size and shape of a bird's feet allows it to live and get food in a certain place.
5. Birds are an important part of a community of living things.

The Pond

Students will understand that:
1. Many different kinds of things live together in and near a pond.
2. Changes in the sun's position cause changes in the water, air, soil, and all living things in or near a pond.
3. In a pond community, all changes affect other things.
4. In nature, all things are related.
5. Change is always taking place everywhere.

Appendix B

Student Test

Appendix B

This appendix includes the test instructions read by the teacher and the student answer sheets.

ID Number: _ _ _ _ _ _ _ _ _ _ _ _ _ _

Your Name: _____

Date test was administered: _____

Instructions for Administering
LET ME SEE! Posttest

In preparation: Please write on each student's test booklet the same number that was assigned to the student for the pretest. A list of student numbers is enclosed in the test packet.

Introduction: Be sure each student has a pencil. Then give each student a test form. As you do this say,

PLEASE LEAVE YOUR BOOKLET CLOSED UNTIL I TELL YOU WHEN TO OPEN IT. WHEN YOU GET YOUR BOOKLET, WRITE YOUR NAME AND YOUR GRADE ON THE LINE.

After all of the students have their booklets and have written their name and grade, then do the example on the front page. The instructions and questions you are to read to the students are printed in capital letters.

I WILL BE ASKING YOU QUESTIONS ABOUT THINGS THAT LIVE AND HAPPEN AROUND YOU. FOR EACH QUESTION YOU ARE TO CIRCLE THE PICTURE THAT YOU THINK IS BEST. FOR SOME QUESTIONS YOU MAY NOT BE SURE WHAT TO CIRCLE. THAT IS OK. JUST CIRCLE THE PICTURE YOU THINK IS BEST. (Have the student leave an item blank if the student becomes too frustrated and doesn't want to take a guess.)

Example: LET'S DO ONE QUESTION TOGETHER. LOOK AT THE FOUR PICTURES ON THE FRONT PAGE OF THE BOOKLET BELOW YOUR NAME. CIRCLE THE PICTURE THAT SHOWS A PLANT THAT HAS ROOTS, LEAVES, AND A FLOWER. Repeat the question and allow enough time for everyone to mark their answers.

DID EVERYONE CIRCLE THE FOURTH PICTURE? (Demonstrate by holding up your booklet and drawing a circle around the fourth picture.)

DOES ANYONE HAVE A QUESTION? (Be sure that students feel at ease and that they know they are to circle what they feel is best.)

Test: OK. TURN THE PAGE SO THAT QUESTION 1 IS ON TOP. (Demonstate with your test form.)

Question 1: FOR QUESTION 1, CIRCLE WHICH OF THESE FOUR PICTURES YOU THINK SHOWS A FORCE. (Repeat the question. Try not to describe a force, but have the students circle the picture they think best describes a force for them.)

Question 2: NOW LOOK AT THE NEXT ROW OF PICTURES, WHICH IS QUESTION 2. CIRCLE THE PICTURE WHICH BEST SHOWS WHAT YOU THINK A PENDULUM IS. (Repeat the question.)

Question 3: QUESTION 3 HAS A PICTURE OF A ROPE, WIND, A MAGNET, AND A WAGON. CIRCLE THE PICTURE THAT SHOWS WHAT CAN BE USED TO MOVE IRON OBJECTS WITHOUT TOUCHING THEM. (Repeat the question.)

Question 4: IN QUESTION 4, TIRE SWINGS OF DIFFERENT LENGTHS ARE SHOWN. CIRCLE THE PICTURE OF THE TIRE SWING THAT WILL SWING THE FASTEST WHEN LEFT TO SWING FREELY. (Repeat the question.)

Question 5: LOOK UNDER THE NUMBER 5. A BALL HANGING ON A STRING IS SHOWN HELD AGAINST A BLOCK. THE FOUR PICTURES SHOW WHAT MAY HAPPEN IF THIS BALL IS LET GO SO THAT IT SWINGS FREELY BACK AND FORTH. CIRCLE THE PICTURE THAT SHOWS WHAT YOU THINK WILL HAPPEN. (Repeat the question.)

TURN THE PAGE SO THAT QUESTION 6 IS ON TOP. (Please demonstrate with your booklet.)

Question 6: IN QUESTION 6, SOMEONE IS SHOWN IN THE FIRST PICTURE TRYING TO PICK UP IRON OBJECTS (first picture), SOMEONE IN THE SECOND PICTURE IS MEASURING THE LENGTH OF AN OBJECT, SOMEONE IN THE THIRD PICTURE IS LOOKING AT THE SHAPE OF AN OBJECT, AND SOMEONE IN THE FOURTH PICTURE IS WEIGHING AN OBJECT. CIRCLE THE PICTURE THAT SHOWS SOMEONE TESTING IF AN OBJECT IS A MAGNET. (Repeat the question.)

Question 7: FOR QUESTION 7, SMALL PARTS OF WATER THAT YOU CANNOT SEE ARE IN THE AIR. CIRCLE THE PICTURE THAT SHOWS WHAT IS NEEDED TO CHANGE THIS WATER IN THE AIR (water vapor) INTO WATER DROPS. IS IT HEAT, WIND, COLD, OR A JET ENGINE? (Repeat the question.)

Question 8: IN QUESTION 8, CIRCLE THE PICTURE THAT SHOWS HOW AIR IN A BOX WOULD LOOK IF YOU COULD SEE IT. (Repeat the question.)

Question 9: IN QUESTION 9, CIRCLE THE PICTURE THAT BEST SHOWS WHAT HAPPENS TO WATER AS IT CHANGES FROM WATER TO VERY SMALL WATER PARTS IN THE AIR AND THEN BACK TO WATER AGAIN. . (Repeat the question.)

Question 10: IN QUESTION 10, PRETEND THE SMALL BLACK DOTS ARE VERY SMALL PARTS OF AIR. THE ARROWS SHOW THE DIRECTION THE PARTS OF AIR ARE MOVING. CIRCLE THE PICTURE WHICH SHOWS HOW THE PARTS OF AIR MOVE TO MAKE WIND. (Repeat the question.)

TURN THE PAGE SO THAT QUESTION 11 IS ON TOP. (Please demonstrate with your booklet.)

Question 11: FOR QUESTION 11, IN THE PICTURES ARE SHOWN PARTS OF ROCKS, LEAVES, SHOVELS, ANTS, AND WORMS. CIRCLE THE PICTURE THAT SHOWS WHAT IS NEEDED TO MAKE SOIL. (Repeat the question.)

Question 12: UNDER NUMBER 12, IN QUESTION 12 IS SHOWN A ROCK. CIRCLE THE PICTURE THAT SHOWS WHAT CAN HAPPEN TO THIS ROCK OVER HUNDREDS OF YEARS. WILL THE ROCK STAY THE SAME, GET LARGER, DISAPPEAR, OR BECOME SOIL? (Repeat the question.)

Question 13: IN QUESTION 13, THE ARROWS IN EACH PICTURE SHOW THE DIRECTION OF PLANT CHANGES. CIRCLE THE PICTURE THAT BEST SHOWS THE PLANT CYCLE (how plants change, beginning as a seed). (Repeat the question.)

Question 14: IN QUESTION 14, BEAKS FROM DIFFERENT BIRDS ARE SHOWN. CIRCLE THE PICTURE OF THE BEAK WHICH IS USED TO EAT WORMS. (Repeat the question.)

Question 15: IN QUESTION 15, FEET OF DIFFERENT BIRDS ARE SHOWN. CIRCLE THE PICTURE OF THE PAIR OF FEET THAT ARE USED FOR CATCHING ANIMALS. (Repeat the question.)

TURN THE PAGE SO THAT QUESTION 16 IS ON TOP. (Please demonstrate with your booklet.)

Question 16: IN QUESTION 16, CIRCLE THE PICTURE THAT SHOWS HOW ANTS AND WORMS HELP PLANTS. DO ANTS AND WORMS SUPPLY FOOD TO PLANTS, DO THEY MIX SOIL, DO THEY EAT OLD LEAVES, OR DO THEY BOTH EAT INSECTS? (Repeat the question.)

Question 17: IN QUESTION 17, CIRCLE THE PICTURE THAT YOU THINK SHOWS AN INSECT. (Repeat the question.)

Question 18: IN QUESTION 18, CIRCLE THE PICTURE WHICH SHOWS PARTS FROM TWO DIFFERENT INSECTS. (Repeat the question.)

Question 19: IN QUESTION 19, THE PICTURES SHOW PARTS OF AIR, WATER, SUNLIGHT, AND SOIL MATERIALS. DEAD PLANTS CANNOT MAKE ONE OF THESE FOUR THINGS THAT GROWING PLANTS USE. CIRCLE THE PICTURE OF THAT ONE THING DEAD PLANTS CANNOT MAKE FOR GROWING PLANTS. (Repeat the question.)

Question 20: IN QUESTION 20, EACH PICTURE SHOWS THE SUN AT LUNCHTIME ON DIFFERENT DAYS OF THE YEAR. CIRCLE THE PICTURE THAT SHOWS THE SUN WARMING THE POND THE MOST. (Repeat the question.)

NOW TAKE A MINUTE AND BE SURE YOU HAVE CIRCLED ONLY ONE PICTURE FOR EACH QUESTION.

After testing: Collect the booklets from each student. Be sure that each booklet has a student name and a student number. Then put these instructions on top. Be sure your name appears on the front page. Then put the student booklets and the instructions in the envelope provided. When all the tests from your school have been given, please package them and leave the package with your school secretary. Then return the postage-paid envelope to us and we will have UPS pick up the package. This will take about a week.

Please write any comments you have below:

_____

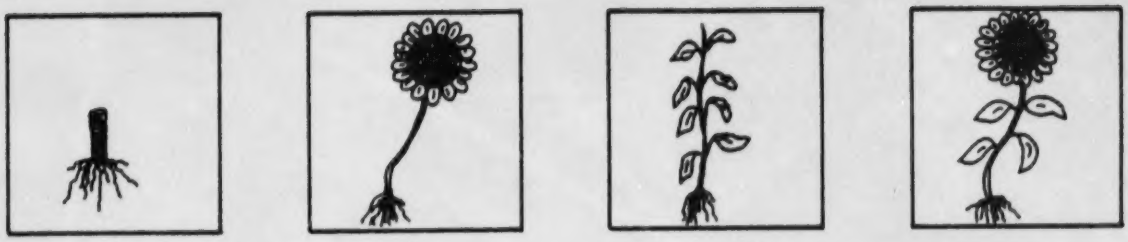
_____

_____

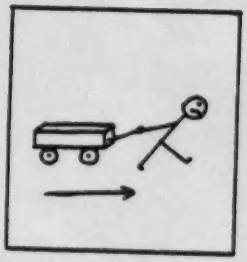
Student Code Number _____ _____

NAME: _____ GRADE: _____

EXAMPLE:

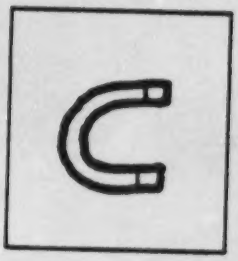
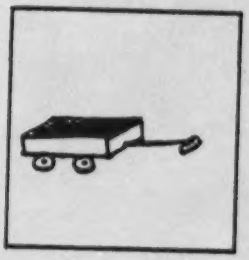


1.



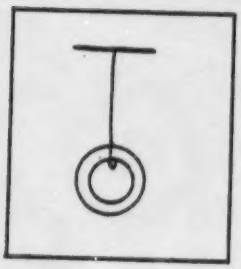
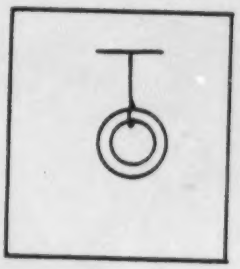
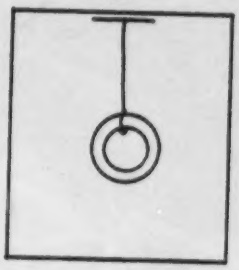
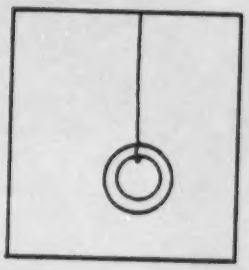
2.

3.

rope wind magnet wagon

4.

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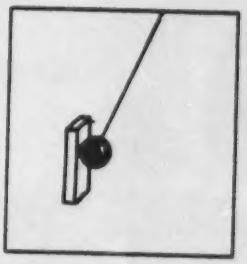
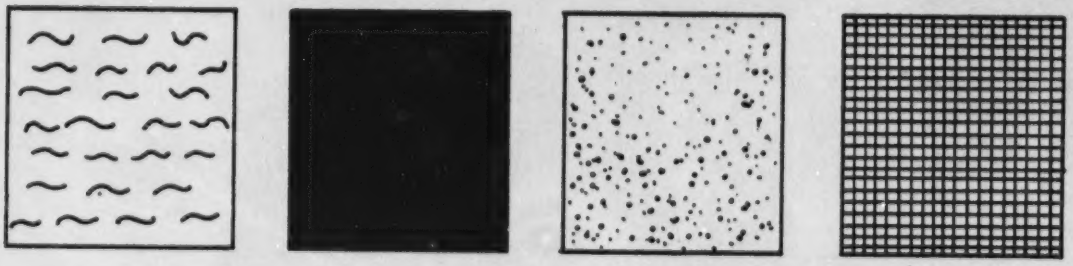


6.

7.

8.



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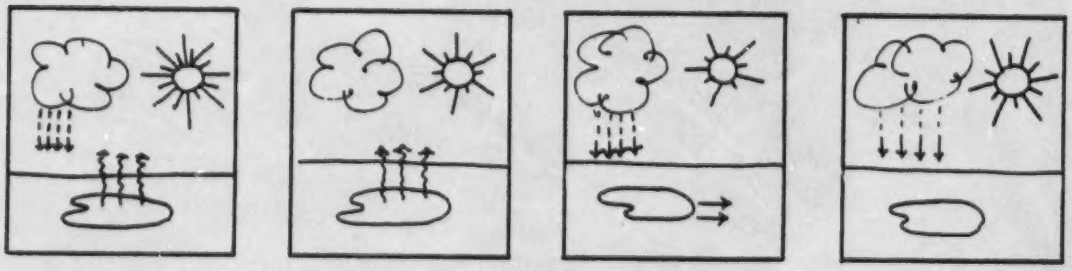

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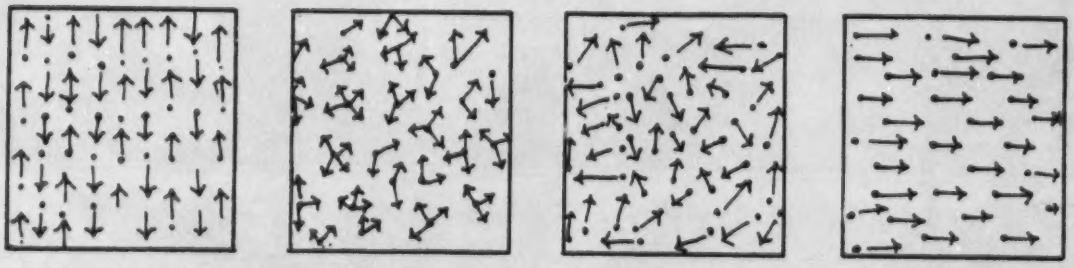
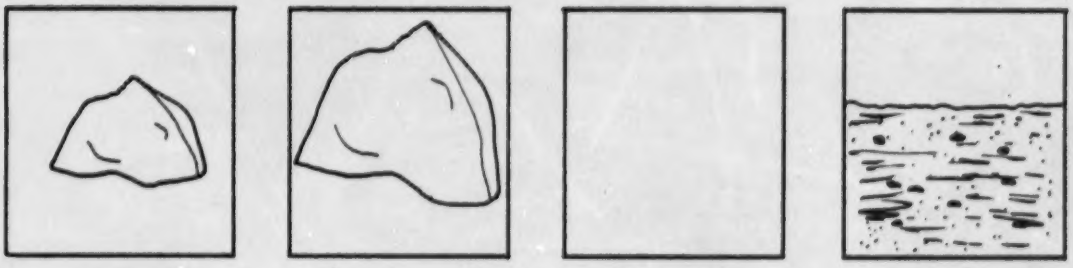


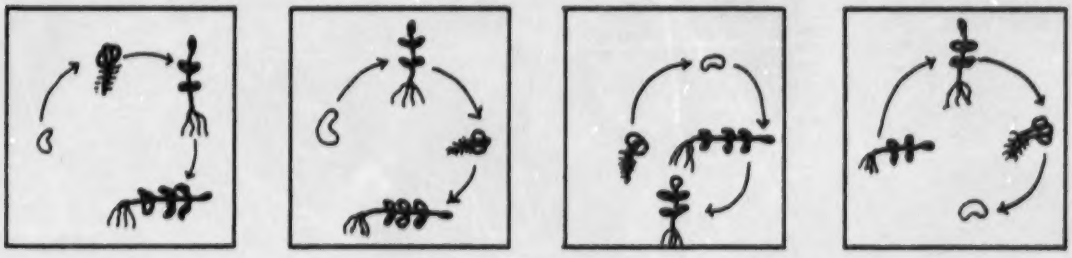
11.

12.



same larger disappear soil

13.



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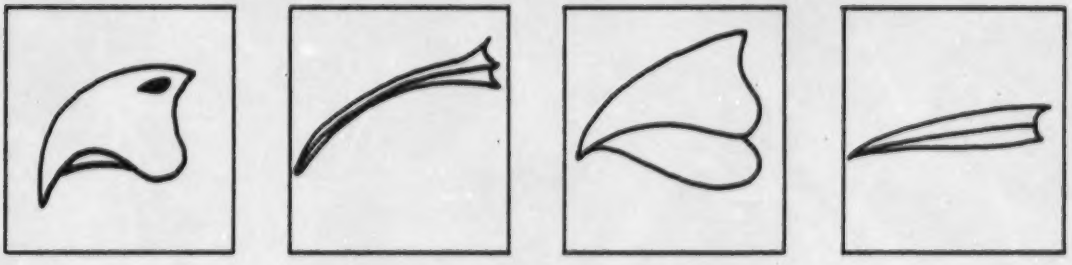

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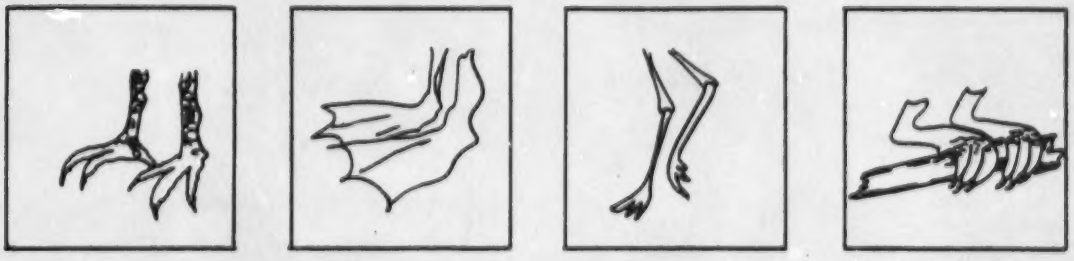


16.

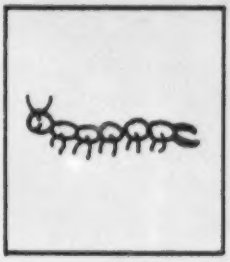
bring food

mix soil

eatold leaves

eat insects

17.



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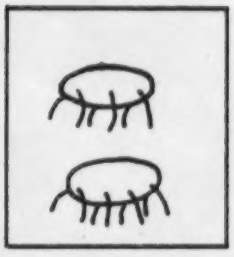

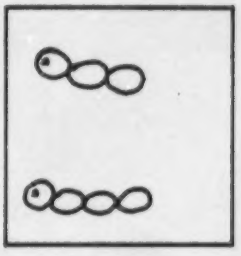

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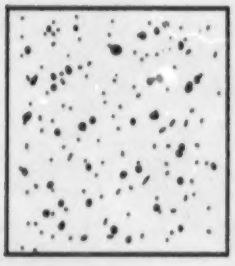
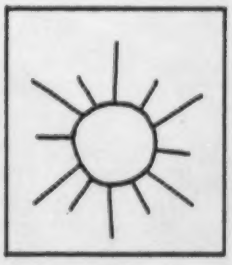
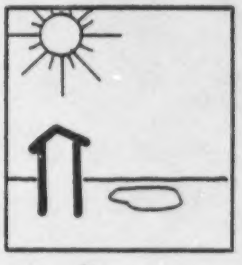

air

water


sunlight

soil

20.



Appendix C

Teacher Questionnaire

Appendix C

This appendix includes the questionnaire given to the teachers using the series, the comments written on the questionnaires by teachers, and the questionnaire given to the control teachers. The frequencies are included on the questionnaire.

ID _ _ _ _ _ _ _ _ _ _ _ _

LET ME SEE!
Teacher Questionnaire

For all questions, please circle the number of the response that is appropriate.
E.g. 1. Yes
2. No

Please return the questionnaire to us along with the student tests.

1. What grade level were the students who viewed the series?
(Circle all that apply.)
0 1.1 K
26 1.2 1
23 1.3 2
1 1.4 3

2. Did you attend a workshop on using LET ME SEE!?
7 1. Yes
40 2. No

3. Have you used other ITV series with your students?
40 1. Yes
6 2. No

4. Give an overall rating of the series.
22 1. Excellent
19 2. Very good
4 3. Good
1 4. Fair
0 5. Poor

5. Give an overall rating of the manual.
17 1. Excellent
20 2. Very good
7 3. Good
1 4. Fair
0 5. Poor

6. How satisfied were you with the series on the whole?
38 1. Very satisfied
7 2. Somewhat satisfied
0 3. Not very satisfied
0 4. Not satisfied at all

7. Please record the estimate of the average number of minutes spent for each program in:

7.1	Planning and preparation	_____ minutes
7.2	Student activities before the program	_____ minutes
7.3	Discussing the program with students directly after the program	_____ minutes
7.4	Doing learning center activities	_____ minutes
7.5	Doing other related activities	_____ minutes

8. Tell us how much you agree or disagree with each of the following statements about the series. For each statement, circle the number of the response that tells how you feel.

		Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
8.1	The acting was good.	1	2	3	4	5
8.2	The series is better than most educational television.	1	2	3	4	5
8.3	The programs kept the interest of my students.	1	2	3	4	5
8.4	I liked the character Pocus.	1	2	3	4	5
8.5	I liked the character Myrtle.	1	2	3	4	5
8.6	I liked the character Hocus.	1	2	3	4	5
8.7	My students liked the character Pocus.	1	2	3	4	5
8.8	My students liked the character Myrtle.	1	2	3	4	5
8.9	My students liked the character Hocus.	1	2	3	4	5
8.10	The characters talked down to the students.	1	2	3	4	5
8.11	My students looked forward to viewing the program.	1	2	3	4	5
8.12	Vocabulary was appropriate for my students.	1	2	3	4	5
8.13	The series was visually attractive.	1	2	3	4	5
8.14	The technical quality (sound, camera work, picture) was professional.	1	2	3	4	5
8.15	The animation effectively communicated ideas.	1	2	3	4	5
8.16	The talking objects (rock and plant) were easy to watch and listen to.	1	2	3	4	5
8.17	Talking objects should not have been included.	1	2	3	4	5

9. Tell us how much you agree or disagree with each of the following statements about outcomes from the series. For each statement, circle the number of the response that tells how you feel.

	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
9.1 The series is educational.	1	2	3	4	5
9.2 The series is entertaining.	1	2	3	4	5
9.3 Students learned from the series.	1	2	3	4	5
9.4 Viewing the series was a waste of time.	1	2	3	4	5
9.5 Studets generated questions about what was presented in the series.	1	2	3	4	5
9.6 The programs motivated students to look for things in their environment.	1	2	3	4	5
9.7 The content presented is important for students to know.	1	2	3	4	5
9.8 The content is accurately presented.	1	2	3	4	5
9.9 Students learned from the series more about change and diversity.	1	2	3	4	5
9.10 Students learned some facts from the series.	1	2	3	4	5

10. The pace of the program was:
    1. Too slow
    2. Too fast
    3. Appropriate for my students

11. The amount of content in each program was:
    1. Too much
    2. Not enough
    3. Appropriate for my students

12. Please rate your satisfaction with the different parts of each lesson in the manual.

	Not Satisfied At All	Not Very Satisfied	Neutral	Somewhat Satisfied	Very Satisfied
12.1 Objectives	1	2	3	4	5
12.2 Synopsis	1	2	3	4	5
12.3 LET ME SEE! box	1	2	3	4	5
12.4 Before-the-program activities	1	2	3	4	5
12.5 After-the-program activities	1	2	3	4	5
12.6 Learning center activities	1	2	3	4	5

13. Did you prepare a LET ME SEE! box for:
    1. all programs
23 2. some programs
20 3. none of the programs

14. Did you do any special projects related to LET ME SEE!?
25 1. No
17 2. Yes
(Explain: _____

_____

_____)

15. Tell us how you rate overall each program.

		Poor	Fair	Good	Very Good	Excellent
15.1	Pendulum	1	2	3	4	5
15.2	Forces	1	2	3	4	5
15.3	Magnets	1	2	3	4	5
15.4	Sun	1	2	3	4	5
15.5	Air and Wind	1	2	3	4	5
15.6	Water and Rain	1	2	3	4	5
15.7	Soil	1	2	3	4	5
15.8	Ants and Worms	1	2	3	4	5
15.9	Plants and Seeds	1	2	3	4	5
15.10	Insects	1	2	3	4	5
15.11	Birds	1	2	3	4	5
15.12	The Pond	1	2	3	4	5

16. What were the two most effective programs?
    16.1 _____ (Explain: _____)

    16.2 _____ (Explain: _____)

17. What were the two least effective programs?
    17.1 _____ (Explain: _____)

    17.2 _____ (Explain: _____)

18. What recommendations do you have for changing any of the programs?

_____

_____

_____

Tell us about your science program.

19. Do you teach science as a regular content area such as reading and math?
35 1. Yes
8 2. No

20. On the average, how many class minutes per week do you spend on science?
_____ minutes

21. Circle which resources (one or more) you use in teaching science.
21.1 Textbook (Identify publisher: _____)
21.2 Workbook
21.3 Locally prepared materials
21.4 Hands-on activities
21.5 Other (Explain: _____)

22. Were you satisfied with how well LET ME SEE! supported or complemented your regular science program?
33 1. Very satisfied
10 2. Somewhat satisfied
1 3. Not very satisfied
0 4. Not satisfied at all

23. Will you be using the series again?
37 1. Yes
4 2. No

24. For what grade level(s) do you think this series is most appropriate? (Circle all that apply.)
7 24.1 K
30 24.2 1
24 24.3 2
10 24.4 3

25. We will be publicizing the series in a number of publications. Would you care to make any comments about the series that you would allow us to use?
_____
_____
_____

26. Can we use your name?
1. Yes (Your name _____)
2. No

27. Any other comments: _____
_____
_____
_____

Thank you

LET ME SEE!
Teacher Questionnaire

ID Number	Item Number	Comments
461202112	07.4	Children spent as much time as they wanted.
461202112	07.5	Same comment as 17.4
460101121	08	Sorry, I cannot remember all these programs.
472903121	08.12	Bit high for below average
472903121	08.17	Kids like them!
421601122	09.3	If extra work was done.
472903121	10	Again--except for below average. Too much for them to grasp and comprehend.
421202122	10.1	Some shows--"Sun"
461202112	10.2	(Too fast) for certain programs.
421601122	10.2	Material-concepts taught were too many at times.
421601122	10.3	If the rest of the week time would be set aside to further study each area.
421202122	10.3	Most
472903121	11	Same as 10
461202112	11.1	(Too much) It depended on the type of program.
488003122	12	Did not use.
315101112	14	We drew pictures and made a story about what we learned.
356621112	14	Spent more time on programs 9-10-11. Planted plants, visited a greenhouse and an animal farm.
371101122	14	I did projects for some programs--Insects, Pendulums, Magnets, Water--and we'll do projects about seeds.
415001122	14	Not yet--insects, ponds, etc. will be readily available here in a few weeks.
461202112	14	Did special units on magnets, birds, insects.

461201112	14	Magnets (experiments); Birds (observations, movies)
357503112	14	Not this year--wanted to become acquainted with content.
357504112	14	"Hands on" projects
421701112	14	Just not enough time! Our units didn't coincide with TV programs.
423001122	14	Experiments with air, manets, planted seeds
498102122	14	Yes, had some birds brought in. Had some real bird feet. Planted seeds. Tried to make condensation and demonstrate evaporation.
498101112	14	At this time we are studying animals and we had a bird brought in to look at his feet and beak. We have also talked about and studied more insects and started an ant farm. We will recall water cycle and demonstrate evaporation and condensation.
496101112	14	We did some of the activities at the end of the teacher's book.
496102111	14	Experience charts; used sundial and prism for sun unit; diagrams of insects; correlated programs to text units; worm farm (children did the collecting on own initiative at recess time); used related library books, pictures, filmstrips and loops when available, and attempted direct observation although weather conditions were poor for it much of the time.
421601122	14	We studied in more detail units on water cycle and birds. Children drew water cycle pictures, drew and colored pictures of birds, made a chart on birds, had riddles to guess familiar birds. We study life cycle of butterflies in fall.
460101121	14	Spelling units
460102121	14	Planned science units to correlate with programs.
321502122	14	Made charts, science table.
421202122	14.2	These programs coincided with other science units I taught so we did many projects.
421201112	14.2	We did water and air experiments and plant experiments.
315104122	15	This is hard to <u>now</u>. We should have been told ahead of time how to rate each program.

482102121	15	Missed programs 9, 11 and 12.
483901121	15	Missed programs 1 and 12.
496101112	15	Missed programs 9 and 11.
472903121	15.12	Didn't get to see.
472902121	15.12	Didn't view
472901121	15.12	Didn't view
315101112	16.1	Ants & Worms--They showed the most interest.
315102112	16.1	Ants & Worms--high interest level
315104122	16.1	Water & Rain--excellent explanations
356621112	16.1	Plants & Seeds--something the children wanted to know more about and were really interested in
482101111	16.1	Birds--lots of enthusiasm
482102121	16.1	Pendulum--Children were finding all kinds after the show.
371101122	16.1	Plants--very good for this time of year
415001122	16.1	Pendulum
485902111	16.1	Pendulum--Kids were most intersted in these areas.
461202112	16.1	Magnets--They were more familiar with these.
461201112	16.1	Soil
357501112	16.1	All were effective.
357503112	16.1	Pendulum
357504112	16.1	All were effective.
356611112	16.1	Pendulum--something new to the students
421701112	16.1	Plants & Seeds--amazing growth process
421703112	16.1	Plants & Seeds--These are subjects they like to talk about.
421704112	16.1	Plants & Seeds--Class was interested and knew about these things.
472711121	16.1	Ants & Worms--We hadn't covered it.
423001122	16.1	Magnets--Children like to work with magnets.

430201122	16.1	Magnets--Follow-up included hands-on experiences.
430202122	16.1	Pendulum--Children were interested and concepts were new.
462002122	16.1	Birds--Related to children's natural environment.
462001112	16.1	I enjoyed them all.
472903121	16.1	Air & Wind
472902121	16.1	Insects--Children understood the objectives.
472901121	16.1	Air & Wind--Concepts came across most clearly.
498102122	16.1	Plants & Seeds--We have units about these.
485903121	16.1	Insects
488002122	16.1	Pendulum
488003122	16.1	Magnets--It showed how to move things without touching them.
498101112	16.1	Birds & Insects--had information to go with science unit.
483901121	16.1	All
496101112	16.1	Pendulums
496102111	16.1	Ants & Worms--most interest was generated
391301112	16.1	Magnets--Relate to science unts we were doing.
421601122	16.1	Water & Rain--Helped reinforce concepts class was learning.
321502122	16.1	Pendulum--something new to the class
421201112	16.1	Air & Wind
315101112	16.2	The Pond--It goes with their habitat around where they live.
315102112	16.2	Insects--high interest level
315104122	16.2	Magnets
356621112	16.2	Birds--something the children wanted to know more about and were really intrested in
482101111	16.2	Pendulum--lots of enthusiasm
482102121	16.2	Insects--the step-by-step explaining and review

371101122	16.2	Birds--how the same and different
415001122	16.2	Pond
485902111	16.2	Magnets--same comment as 16.1
461202112	16.2	Birds--same comment as 16.1
461201112	16.2	Magnets
357503112	16.2	Magnets
356611112	16.2	Plants--relates to everyday environment
421701112	16.2	Pond--interest level on level
421703112	16.2	Insects--same comment as 16.1
421704112	16.2	Insects--same comment as 16.1
472711121	16.2	Birds--good comparison
423001122	16.2	Forces
430201122	16.2	Water & Rain--well explained
430202122	16.2	Forces--same as 16.1
462002122	16.2	Ants & Worms--same as 16.1
472903121	16.2	Insects
472902121	16.2	Air & Wind--same as 16.1
472901121	16.2	Insects--same as 16.1
498102122	16.2	Sun-Water-Wind--same as 16.1
485903121	16.2	Water & Rain
488002122	16.2	Plants & Seeds
488003122	16.2	Birds--There were pretty birds.
498101112	16.2	Sun, Air, Water--information pertaining to weather unit.
496101112	16.2	Magnets
496102111	16.2	Insects--photography
391301112	16.2	The Pond--same as 16.1
421601122	16.2	Pendulum--Children found it interesting and remembered concept.

321502122	16.2	Forces--same comment as 16.1
421201112	16.2	Pendulum
315101112	17.1	Pendulum--Didn't have enough things to work with.
315102112	17.1	Forces
315104122	17.1	Forces--hard concept for many to understand
356621112	17.1	Really don't think any of the programs could be termed ineffective.
482101111	17.1	Forces--too advanced
371101122	17.1	None were least--some were harder.
415001122	17.1	Ants & Worms--January is a poor time in Wisconsin for ants.
461202112	17.1	Forces--Seem to be harder for the children to understand.
461201112	17.1	Pendulum
356611112	17.1	Insects--facts were old to the students.
421701112	17.1	Pendulum--way above academic level
421703112	17.1	Pendulum--hard for them to understand
421704112	17.1	Pendulum--Class was not familiar with these.
472711121	17.1	Magnets--too simple
430201122	17.1	Pendulums--why pendulums?
430202122	17.1	Ants & Worms--wrong time of year to do follow-up for both.
462002122	17.1	Forces--difficult to children
472903121	17.1	Pendulum
472902121	17.1	Water & Rain--Children could not understand all the concepts.
472901121	17.1	Water & Rain--Children needed lengthy post-discussion and activities in order to understand concepts (not clear in program.
498102122	17.1	Soil--Soil is hard to make interesting and entertaining.
485903121	17.1	Forces

488002122	17.1	Sun
488003122	17.1	Forces--Too much of the same examples
496101112	17.1	Sun
496102111	17.1	Forces--abstractness of concept
391301112	17.1	Insects
421601122	17.1	Sun--Should be a better way to show rays of sun in winter and summer.
321502122	17.1	Magnets--I had my science lesson about magnets before this program.
421201112	17.1	Sun
315101112	17.2	Magnets--They did a little bit with magnets but found it boring after awhile.
315102112	17.2	Air & Wind
315104122	17.2	The Pond--too general
482101111	17.2	Water & Rain--too advanced
415001122	17.2	Sun--difficult concept
461202112	17.2	Water & Rain--same comment as 17.1
461201112	17.2	Forces
356611112	17.2	The Pond--not too well presented
421701112	17.2	Forces--not appropriate for first
421703112	17.2	Forces--same comment as 17.1
421704112	17.2	Forces--same comment as 17.1
472711121	17.2	Sun--could have been more interesting
423001122	17.2	The Pond
430202122	17.2	Plants & Seeds--same as 17.1
462002122	17.2	Pendulum--same as 17.1
472903121	17.2	Water & Rain--difficult concepts
472902121	17.2	Ants & Worms--same as 17.1
472901121	17.2	Ants & Worms--same as 17.1

485903121	17.2	Air & Wind
488002122	17.2	Forces
488003122	17.2	Plants & Seeds--Too much explaining needed
496101112	17.2	Forces
496102111	17.2	Magnets--Children seemed well acquainted with topic from kindergarten background.
391301112	17.2	Worms
421601122	17.2	Hard to carry out activities, especially in winter.
321502122	17.2	Insects--same comment as 17.1
315101112	18	I thought the programs were terrific and hope we will be able to do more with them next year.
482101111	18	The program was very good, but may be better for 2nd and 3rd grade. My children understood most of the material, but some went over their heads.
482102121	18	I thought they were very good the way they were. The class really enjoyed the talking rock.
371101122	18	Recommend a library or science book or have ditto sheets to help with concepts.
461202112	18	For my first graders, I felt the vocabulary was a little more difficult for them to learn and remember (condensation, etc.).
357504112	18	Great show!
421704112	18	Choose items more familiar to first grade students.
472711121	18	They're good for K-1. Leave as is.
430201122	18	The programs on ants & worms and plants & seeds were viewed at an inappropriate time. The ground was frozen and snow-covered. Thus, follow-up activities could not be done.
430102122	18	Start the series more toward spring so the last half can be seen during appropriate weather.
472903121	18	Pendulums not an objective for grade 2--is it important?--how about planets and solar system instead, to go along with the sun?
472902121	18	Is it important to study pendulums?
472901121	18	Why have a program on pendulums?

498102122	18	More review--not all crammed into one program.
488003122	18	Use children to do examples. They love to watch other children do things.
498101112	18	The total review could be done in two programs to allow more opportunity to review main objectives.
391301112	18	These were excellent programs. Next year I hope to center our science units around the program.
421601112	18	Change Ants & Worms to how wind, weather and rain change soil, or another program on different kinds of plants. Or different ways we can get new plants--cuttings, bulbs, etc. Or parts of plants we eat.
461202112	19	Not a daily class
461201112	19	No--alternate semester with health and social studies
321502122	19	Science is taught in my room as scheduled in my daily program.
371101122	20	Varies
301401112	21.1	Silver Burdett
415001122	21.1	Houghton-Mifflin
356611112	21.1	America Book Co.
472711121	21.1	Harcourt Brace Jovanovich
432001122	21.1	Science--Understanding Our Environment (Silver Burdett)
430201122	21.1	Silver-Burdette
430102122	21.1	Silver Burdette
462002122	21.1	Laidlaw
472903121	21.1	Merrill
472902121	21.1	Merrill
472901121	21.1	Merrill - 2
498102122	21.1	Harcourt-Brace
485903121	21.1	Ginn & Company
488003122	21.1	Holt

498101112	21.1	Harcourt-Brace
483901121	21.1	"Science" Silver Burdett
460101121	21.1	Heath
321501112	21.1	Houghton-Mifflin
321502122	21.1	Berger-Berkheimer-Lewis Neuberger
461202112	21.4	The Center for Applied Research in Education, Inc.
472901121	21.4	Filmstrips, transparencies, films
315104122	21.5	ITV programs
371101122	21.5	Live animals--plants
357503112	21.5	Units--planned by teacher, IMC director
421701112	21.5	Teacher units
421704112	21.5	Filmstrips, study prints, pictures
472711121	21.5	Filmstrips, TV DRAGONS, WAGONS & WAX
472903121	21.5	Filmstrips, transparencies, films
472902121	21.5	Filmstrips, transparencies, films
498102122	21.5	Science kit, filmstrips, library books
488003122	21.5	Team teaching--a grade 6 teacher teaches my class.
498101112	21.5	Filmstrips, library books
483901121	21.5	Milliken-duplicating and transparency books (primary subjects)
496102111	21.5	Self-made materials, primary science kit materials and activity book, filmstrips, books, picture-study sets, etc.
460101121	21.5	IMC materials
421202122	21.5	Library books
421201112	21.5	Materials I put together myself--AV--follow-up of Weekly Reader lessons.
371101122	23	New books for next year
356611112	23	I'm not sure as we are assigned TV programs (by grade levels).

421201112	23.2	Because the second grade teacher will be using it.
315101112	25	I really got a lot of good ideas myself from the teacher's material. (Yes)
482102121	25	I know my class looked forward to viewing the program and learned from it. (June Jerome)
371101122	25	An excellent program which the children were anxious to watch (Pat Schroeder)
461201112	25	This is an excellent program and can be used to acquaint and interest students with their environment. (Mrs. Gabriel)
432001122	25	The students enjoyed the program. They were very attentive. They enjoyed the characters. (Virginia M. Kuether)
462002122	25	Held the children's interest. Children looked forward to viewing the program. (Agnes Peterson)
485903121	25	The LET ME SEE! series was very creatively done. It held the children's interest and was very helpful in supplementing our present science program. (Sandra Lee)
391301112	25	My students really enjoyed this series. Finally we've found a science program that is really worth watching. (Sue Cychosz)
421601112	25	I found the series very useful in our science program. The children were attentive and interested.
421201112	25	I liked the concepts that were presented. The children were very interested and learned a great deal I think. The manual is very good.
356621112	26	Marilyn J. Freitag
357504112	26	(Jeanette Warren)
498102122	26	(Linda Dahlberg)
488003122	26	(Yvonne Talcott)
498101112	26	(Sally Jacobson)
321502122	26	Yes
301401112	27	I didn't watch all the programs as I couldn't fit them in my schedule. This is more for 2nd and 3rd grade.

315101112	27	I hope to be able to make use of the information for the LET ME SEE! Box. This year at the time we saw it we could follow up with the program.
315103122	27	The way our classes are handled, I was not in the room when the children saw this series. I therefore refer you to the questionnaire filled out by P. Steuernagel.
482102121	27	I'd like to see a TV show dealing with divorce and death and the single parent family. This seems to be a growing problem that children face.
371101122	27	I corrected the tests for fun and I am really happy with the gains the children made. Super!
461202112	27	Extra work has to be spent with children in first grade on some of the terminology (pronunciation and drill) on what they mean and learn that word for their vocabulary. I thought many of the test questions were worded too difficult for the first graders!
461201112	27	I hope this program will be included in our listings for next year.
421701112	27	The youngsters seemed to like the program as they do other educational TV programs. Some areas seemed advanced and some on their level. The tests were "way too hard!" The group got upset over it! I would rate it as an "average" program.
498102122	27	Children loved the program. Couldn't wait to see it. Presented in an interesting way. Encouraged learning.
498101112	27	The children had a high interest level due to background information from science units in classroom. It moved quickly, held their attention without being too busy, and got across information and facts stated in objectives of each tape.
496102111	27	Seems extremely appropriate for average first grade. I believe that it would be a too-low level presentation for sem. II second grade.
460102121	27	The characters are novel at first, but become tiresome. Try to correct some inaccuracies.

ID _ _ _ _ _ _ _ _ _ _ _ _

LET ME SEE!
Control Teacher Questionnaire

Please answer these questions about your science program and what science content your students may have been exposed to in the last three months.

For all questions, please circle the number of the response that is appropriate.
E.g. 1. Yes
2. No

Please return the questionnaire to us along with the student tests.

1. Do you teach science as a regular content area such as reading and math?
   1. Yes
   2. No

2. On the average, how many class minutes per week do you spend on science?

   _____ minutes

3. Circle which resources (one or more) you use in teaching science.
   21.1 Textbook (Identify publisher: _____)
   21.2 Workbook
   21.3 Locally prepared materials
   21.4 Hands-on activities
   21.5 Other (Explain: _____)

4. Have your students received any instruction or done any work in the last three months (February, March and April) on any of these topics?

4.1	Pendulum	Yes	No
4.2	Forces	Yes	No
4.3	Magnets	Yes	No
4.4	Sun	Yes	No
4.5	Air and Wind	Yes	No
4.6	Water and Rain	Yes	No
4.7	Soil	Yes	No
4.8	Ants and Worms	Yes	No
4.9	Plants and Seeds	Yes	No
4.10	Insects	Yes	No
4.11	Birds	Yes	No

5. Please list any instructional experiences that your students have had over the last three months that may affect their scores on the science test.

_____

_____

Thank you

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Appendix D

Teacher Interview Questions

Appendix D

This appendix is the form used to interview teachers whose students were not tested.

LET ME SEE!
Teacher Interview Questions

Teacher's Name: _____ Interviewer: _____

Grade: _____ Date: _____

School/District: _____

1. What did you like best about LET ME SEE!?

2. What did you like the least?

3. What preparations did you make prior to viewing the programs?

4. How did you introduce the programs? (time spent, questions asked)

5. What kind of activities did you have your students do following the programs?

6. How useful was the teacher's guide for planning and doing related activities?

7. Which activities and programs worked for you and which did not?

8. How did your students respond to the programs and what outcomes have you noticed that you could attribute to their viewing the series and doing the related activities?

9. What suggestions do you have for teachers who will be using LET ME SEE! in the future?

10. What emphasis do you place on science instruction compared to other content areas?